

#17

SEQUENCE LISTING

<110> Rudnicki, Michael A.

Sabourin, Luc A.

<120> A Caspase Activated Protein Kinase

<130> 12536-2

<140> US 09/926,036

<141> 2000-02-18

<150> US 60/120,784

<151> 1999-02-19

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<170> PatentIn version 3.1

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Phe Trp Glu Ile Ile Gly Glu Leu Gly Asp Gly Ala Phe Gly Lys Val  
 35 40 45

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Asp	Ile	Leu	Ala	Ser	Cys	Asp	His	Pro	Asn	Ile	Val	Lys	Leu	Leu	Asp	85	90	95	
Ala	Phe	Tyr	Tyr	Glu	Asn	Asn	Leu	Trp	Ile	Leu	Ile	Glu	Phe	Cys	Ala	100	105	110	
Gly	Gly	Ala	Val	Asp	Ala	Val	Met	Leu	Glu	Leu	Glu	Arg	Pro	Leu	Thr	115	120	125	
Glu	Ser	Gln	Ile	Gln	Val	Val	Cys	Lys	Gln	Thr	Leu	Glu	Ala	Leu	Asn	130	135	140	
Tyr	Leu	His	Asp	Asn	Lys	Ile	Ile	His	Arg	Asp	Leu	Lys	Ala	Gly	Asn	145	150	155	160
Ile	Leu	Phe	Thr	Leu	Asp	Gly	Asp	Ile	Lys	Leu	Ala	Asp	Phe	Gly	Val	165	170	175	
Ser	Ala	Lys	Asn	Thr	Arg	Thr	Ile	Gln	Arg	Arg	Asp	Ser	Phe	Ile	Gly	180	185	190	
Thr	Pro	Tyr	Trp	Met	Ala	Pro	Glu	Val	Val	Met	Cys	Glu	Thr	Ser	Lys	195	200	205	
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Leu	Ile	Glu	Met	Ala	Glu	Ile	Glu	Pro	Pro	His	His	Glu	Leu	Asn	Pro	225	230	235	240
Met	Arg	Val	Leu	Leu	Lys	Ile	Ala	Lys	Ser	Glu	Pro	Pro	Thr	Leu	Ala	245	250	255	
Gln	Pro	Ser	Lys	Trp	Ser	Ser	Asn	Phe	Lys	Asp	Phe	Leu	Arg	Lys	Cys	260	265	270	
Leu	Glu	Lys	Asn	Val	Asp	Ala	Arg	Trp	Thr	Thr	Ser	Gln	Leu	Leu	Gln	275	280	285	
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Gln Ser Thr Ser Glu Asp Lys Phe Ser Asn Lys Ile Leu Asn Glu Lys				
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Val Asn Leu Glu Thr Gly Ala Glu Leu Asn Asp Gln Thr Val Gly Ile				
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His Glu Asn Gly Arg Glu Lys Lys Arg Pro Lys Leu Glu Asn Leu Pro				
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Asp Thr Gln Asp Gln Gln Thr Val Asp Val Asn Ser Val Ser Glu Glu				
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Asn Glu Asn Asn Arg Val Thr Leu Glu Thr Asn Thr Asp Cys Leu Lys				
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Pro Glu Glu Asp Arg Asn Lys Glu Asn Gln Glu Thr Leu Glu Ser Lys				
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Leu Ile Gln Ser Glu Glu Ile Asn Asp Thr His Ile Gln Thr Met Asp				
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Leu Val Ser Gln Glu Thr Gly Glu Lys Glu Ala Asp Phe Gln Ala Val				
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Asp Asn Glu Val Gly Leu Thr Lys Glu Glu Thr Gln Glu Lys Leu Gly				
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Lys Asp Gly Thr Ala Gln Lys Val Ile Thr Ser Asp Arg Ser Ser Glu				
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Lys	Glu	Glu	Met	Gly	Ala	Leu	Pro	Lys	Pro	Glu	Thr	Ile	Leu	Pro	Pro	725	730	735	
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Leu	Ser	Lys	Ala	Lys	Asp	Ser	Gly	Ser	Val	Ser	Leu	Gln	Glu	Thr	Arg	770	775	780	
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Val Glu Val Ser Val Thr Thr Ser Lys Ile Val Thr Asp Ser Asp Ser  
805 810 815

Lys Thr Glu Glu Leu Arg Phe Leu Arg Arg Gln Glu Leu Arg Glu Leu  
820 825 830

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Lys Leu Gln Gln Gln Arg Glu Gln Ile Phe Arg Arg Phe Glu Gln Glu  
850 855 860

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865 870 875 880

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885 890 895

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Glu Phe Val Gln Lys Gln Gln Gln Glu Leu Asp Gly Ser Leu Lys Lys  
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Ile Ile Gln Gln Gln Lys Ala Glu Leu Ala Asn Ile Glu Arg Glu Cys  
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Leu Asn Asn Lys Gln Gln Leu Met Arg Ala Arg Glu Ala Ala Ile Trp  
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Glu Leu Glu Glu Arg His Leu Gln Glu Lys His Gln Leu Leu Lys Gln  
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Gln Leu Lys Asp Gln Tyr Phe Met Gln Arg His Gln Leu Leu Lys Arg  
995 1000 1005

His Glu Lys Glu Thr Glu Gln Met Gln Arg Tyr Asn Gln Arg Leu  
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Lys Lys Ser Leu Arg Ile Asn Ser Thr Ala Thr Pro Asp Gln Asp  
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Gln Lys Leu Lys Glu Leu Asp Glu Glu His Ser Gln Glu Leu Lys  
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<400> 3

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Phe Trp Glu Ile Ile Gly Glu Leu Gly Asp Gly Ala Phe Gly Lys Val

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Ala	Phe	Tyr	Tyr	Glu	Asn	Asn	Leu	Trp	Ile	Leu	Ile	Glu	Phe	Cys	Ala				
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Gly	Gly	Ala	Val	Asp	Ala	Val	Met	Leu	Glu	Leu	Glu	Arg	Pro	Leu	Thr				
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Glu	Ser	Gln	Ile	Gln	Val	Val	Cys	Lys	Gln	Thr	Leu	Glu	Ala	Leu	Asn				
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Ser	Ala	Lys	Asn	Thr	Arg	Thr	Ile	Gln	Arg	Arg	Asp	Ser	Phe	Ile	Gly				
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Gln	Pro	Ser	Lys	Trp	Ser	Ser	Asn	Phe	Lys	Asp	Phe	Leu	Arg	Lys	Cys				
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His Pro Phe Val Thr Val Asp Ser Asn Lys Pro Val Arg Glu Leu Ile  
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Glu Asp Glu Glu Glu Glu Ala Glu Asn Ala Leu Pro Ile  
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Phe Trp Glu Ile Ile Gly Glu Leu Gly Asp Gly Ala Phe Gly Lys Val  
35 40 45

Tyr Lys Ala Gln Asn Lys Glu Thr Ser Val Leu Ala Ala Ala Lys Val  
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Ile Asp Thr Lys Ser Glu Glu Glu Leu Glu Asp Tyr Met Val Glu Ile  
65 70 75 80

Asp Ile Leu Ala Ser Cys Asp His Pro Asn Ile Val Lys Leu Leu Asp  
85 90 95

Ala Phe Tyr Tyr Glu Asn Asn Leu Trp Ile Leu Ile Glu Phe Cys Ala  
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Gly Gly Ala Val Asp Ala Val Met Leu Glu Leu Glu Arg Pro Leu Thr  
115 120 125

Glu Ser Gln Ile Gln Val Val Cys Lys Gln Thr Leu Asp Ala Leu Asn  
130 135 140

Tyr Leu His Asp Asn Lys Ile Ile His Arg Asp Leu Lys Ala Gly Asn  
145 150 155 160

Ile Leu Phe Thr Leu Asp Gly Asp Ile Lys Leu Ala Asp Phe Gly Val  
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Ser Ala Lys Asn Thr Arg Thr Ile Gln Arg Arg Asp Ser Phe Ile Gly  
180 185 190

Thr Pro Tyr Trp Met Ala Pro Glu Val Val Met Cys Glu Thr Ser Lys  
195 200 205

Asp Arg Pro Tyr Asp Tyr Lys Ala Asp Val Trp Ser Leu Gly Ile Thr  
210 215 220

Leu Ile Glu Met Ala Glu Ile Glu Pro Pro His His Glu Leu Asn Pro  
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Met Arg Val Leu Leu Lys Ile Ala Lys Ser Glu Pro Pro Thr Leu Ala  
245 250 255

Gln Pro Ser Arg Trp Ser Ser Asn Phe Lys Asp Phe Leu Lys Lys Cys  
260 265 270

Leu Glu Lys Asn Val Asp Ala Arg Trp Thr Thr Ser Gln Leu Leu Gln  
275 280 285

His Pro Phe Val Thr Val Asp Ser Asn Lys Pro Ile Arg Glu Leu Ile  
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Ala Glu Ala Lys Ala Glu Val Thr Glu Glu Val Glu Asp Gly Lys Glu  
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Glu Asp Glu Glu Glu Glu Thr Glu Asn Ser Leu Pro Ile  
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<211> 335

<212> PRT

<213> Homo sapiens

<400> 5

Met Ala Phe Ala Asn Phe Arg Arg Ile Leu Arg Leu Ser Thr Phe Glu  
1 5 10 15

Lys Arg Lys Ser Arg Glu Tyr Glu His Val Arg Arg Asp Leu Asp Pro  
20 25 30

Asn	Asp	Val	Trp	Glu	Ile	Val	Gly	Glu	Leu	Gly	Asp	Gly	Ala	Phe	Gly
		35					40					45			
Lys	Val	Tyr	Lys	Ala	Lys	Asn	Lys	Glu	Thr	Gly	Ala	Leu	Ala	Ala	Ala
	50					55					60				
Lys	Val	Ile	Glu	Thr	Lys	Ser	Glu	Glu	Glu	Leu	Glu	Asp	Tyr	Ile	Val
65					70					75					80
Glu	Ile	Glu	Ile	Leu	Ala	Thr	Cys	Asp	His	Pro	Tyr	Ile	Val	Lys	Leu
				85					90					95	
Leu	Gly	Ala	Tyr	Tyr	Tyr	Asp	Gly	Lys	Leu	Trp	Ile	Met	Ile	Glu	Phe
			100					105					110		
Cys	Pro	Gly	Gly	Ala	Val	Asp	Ala	Ile	Met	Leu	Glu	Leu	Asp	Arg	Gly
		115					120					125			
Leu	Thr	Glu	Pro	Gln	Ile	Gln	Val	Val	Cys	Arg	Gln	Met	Leu	Glu	Ala
	130					135					140				
Leu	Asn	Phe	Leu	His	Gly	Lys	Arg	Ile	Ile	His	Arg	Asp	Leu	Lys	Ala
145					150					155					160
Gly	Asn	Val	Leu	Met	Thr	Leu	Glu	Gly	Asp	Ile	Arg	Leu	Ala	Asp	Phe
				165					170					175	
Gly	Val	Ser	Ala	Lys	Asn	Leu	Lys	Thr	Leu	Gln	Lys	Arg	Asp	Ser	Phe
			180					185					190		
Ile	Gly	Thr	Pro	Tyr	Trp	Met	Ala	Pro	Glu	Val	Val	Leu	Cys	Glu	Thr
		195					200					205			
Met	Lys	Asp	Ala	Pro	Tyr	Asp	Tyr	Lys	Ala	Asp	Ile	Trp	Ser	Leu	Gly
	210					215					220				
Ile	Thr	Leu	Ile	Glu	Met	Ala	Gln	Ile	Glu	Pro	Pro	His	His	Glu	Leu
225					230					235					240
Asn	Pro	Met	Arg	Val	Leu	Leu	Lys	Ile	Ala	Lys	Ser	Asp	Pro	Pro	Thr
				245					250					255	
Leu	Leu	Thr	Pro	Ser	Lys	Trp	Ser	Val	Glu	Phe	Arg	Asp	Phe	Leu	Lys
			260					265					270		
Ile	Ala	Leu	Asp	Lys	Asn	Pro	Glu	Thr	Arg	Pro	Ser	Ala	Ala	Gln	Leu

275 280 285

Leu Gln His Pro Phe Val Ser Arg Val Thr Ser Asn Lys Ala Leu Arg  
290 295 300

Glu Leu Val Ala Glu Ala Lys Ala Glu Val Met Glu Glu Ile Glu Asp  
305 310 315 320

Gly Arg Glu Asp Gly Glu Glu Glu Asp Ala Val Asp Ala Val Pro  
325 330 335

<210> 6

<211> 297

<212> PRT

<213> Homo sapiens

<400> 6

Met Glu Thr Val Gln Leu Arg Asn Pro Pro Arg Arg Gln Leu Lys Lys  
1 5 10 15

Leu Asp Glu Asp Ser Leu Thr Lys Gln Pro Glu Glu Val Phe Asp Val  
20 25 30

Leu Glu Lys Leu Gly Glu Gly Ser Tyr Gly Ser Val Tyr Lys Ala Ile  
35 40 45

His Lys Glu Thr Gly Gln Ile Val Ala Ile Lys Gln Val Pro Val Glu  
50 55 60

Ser Asp Leu Gln Glu Ile Ile Lys Glu Ile Ser Ile Met Gln Gln Cys  
65 70 75 80

Asp Ser Pro His Val Val Lys Tyr Tyr Gly Ser Tyr Phe Lys Asn Thr  
85 90 95

Asp Leu Trp Ile Val Met Glu Tyr Cys Gly Ala Gly Ser Val Ser Asp  
100 105 110

Ile Ile Arg Leu Arg Asn Lys Thr Leu Thr Glu Asp Glu Ile Ala Thr  
115 120 125

Ile Leu Gln Ser Thr Leu Lys Gly Leu Glu Tyr Leu His Phe Met Arg  
130 135 140

Lys Ile His Arg Asp Ile Lys Ala Gly Asn Ile Leu Leu Asn Thr Glu  
145 150 155 160

Gly His Ala Lys Leu Ala Asp Phe Gly Val Ala Gly Gln Leu Thr Asp  
165 170 175

Thr Met Ala Lys Arg Asn Thr Val Ile Gly Thr Pro Phe Trp Met Ala  
180 185 190

Pro Glu Val Ile Gln Glu Ile Gly Tyr Asn Cys Val Ala Asp Ile Trp  
195 200 205

Ser Leu Gly Ile Thr Ala Ile Glu Met Ala Glu Gly Lys Arg Pro Tyr  
210 215 220

Ala Asp Ile His Pro Met Arg Ala Ile Phe Met Ile Pro Thr Asn Pro  
225 230 235 240

Pro Pro Thr Phe Arg Lys Pro Glu Leu Trp Ser Asp Asn Phe Thr Asp  
245 250 255

Phe Val Lys Gln Cys Leu Val Lys Ser Pro Glu Gln Arg Ala Thr Ala  
260 265 270

Thr Gln Leu Leu Gln His Pro Phe Val Arg Ser Ala Lys Gly Val Ser  
275 280 285

Ile Leu Arg Asp Leu Ile Asn Glu Ala  
290 295

<210> 7

<211> 873

<212> PRT

<213> Mus musculus

<400> 7

Ala Leu Pro Ile Pro Ala Asn Lys Arg Ala Ser Ser Asp Leu Ser Ile  
1 5 10 15

Ala Ser Ser Glu Glu Asp Lys Leu Ser Gln Asn Ala Cys Ile Leu Glu  
20 25 30

Ser Val Ser Glu Arg Thr Glu Gln Ser Thr Ser Glu Asp Lys Phe Ser  
35 40 45

Asn Lys Ile Leu Asn Glu Lys Pro Thr Thr Asp Gly Pro Glu Lys Ala  
50 55 60

Val Asp Glu His Ala Ser Asp Val Asn Leu Glu Thr Gly Ala Glu Leu  
65 70 75 80

Asn Asp Gln Thr Val Gly Ile His Glu Asn Gly Arg Glu Lys Lys Arg  
85 90 95

Pro Lys Leu Glu Asn Leu Pro Asp Thr Gln Asp Gln Gln Thr Val Asp  
100 105 110

Val Asn Ser Val Ser Glu Glu Asn Glu Asn Asn Arg Val Thr Leu Glu  
115 120 125

Thr Asn Thr Asp Cys Leu Lys Pro Glu Glu Asp Arg Asn Lys Glu Asn  
130 135 140

Gln Glu Thr Leu Glu Ser Lys Leu Ile Gln Ser Glu Glu Ile Asn Asp  
145 150 155 160

Thr His Ile Gln Thr Met Asp Leu Val Ser Gln Glu Thr Gly Glu Lys  
165 170 175

Glu Ala Asp Phe Gln Ala Val Asp Asn Glu Val Gly Leu Thr Lys Glu  
180 185 190

Glu Thr Gln Glu Lys Leu Gly Lys Asp Gly Thr Ala Gln Lys Val Ile  
195 200 205

Thr Ser Asp Arg Ser Ser Glu Val Gly Thr Asp Glu Ala Leu Asp Asp  
210 215 220

Thr Gln Lys Ala Ala Glu Leu Ser Lys Ala Ala Gln Ser Gly Glu Gly  
225 230 235 240

Asp Glu Ala Leu Ala Pro Thr Gln Thr Leu Ala Glu Lys Pro Thr Glu  
245 250 255

Gly Pro Glu Ala Gly Gly Ala Glu Glu Glu Pro Pro Gly Gly Glu Arg  
260 265 270

Val Glu Asp Lys Gln Pro Glu Gln Gln Pro Ala Val Cys Glu Ala Glu  
275 280 285

Gly Gln Leu Thr Ser Thr Ser Glu Thr Thr Arg Ala Thr Leu Glu Gln  
290 295 300



Pro	Glu	Thr	Asp	Glu	Val	Glu	Gln	Val	Ser	Glu	Ser	Asn	Ser	Ile	Glu	305	310	315	320
Glu	Leu	Glu	Arg	Leu	Val	Val	Thr	Gly	Ala	Glu	Ala	Arg	Ala	Leu	Gly	325	330	335	
Ser	Glu	Gly	Glu	Ala	Ala	Ala	Thr	Glu	Val	Asp	Leu	Glu	Arg	Lys	Glu	340	345	350	
Asn	Ala	Gln	Lys	Val	Pro	Val	Lys	Ala	Glu	Ser	Gln	Ala	Pro	Ala	Ala	355	360	365	
Ser	Gln	Pro	Ser	Glu	Pro	His	Pro	Val	Leu	Ile	Pro	Ser	Ile	Asn	Ile	370	375	380	
Asn	Ser	Glu	Thr	Thr	Glu	Asn	Lys	Glu	Glu	Met	Gly	Ala	Leu	Pro	Lys	385	390	395	400
Pro	Glu	Thr	Ile	Leu	Pro	Pro	Glu	Pro	Glu	His	Glu	Lys	Gly	Asn	Asp	405	410	415	
Thr	Asp	Ser	Gly	Thr	Gly	Ser	Thr	Val	Glu	Asn	Ser	Ser	Gly	Asp	Leu	420	425	430	
Asn	Leu	Ser	Ile	Ser	Ser	Phe	Leu	Ser	Lys	Ala	Lys	Asp	Ser	Gly	Ser	435	440	445	
Val	Ser	Leu	Gln	Glu	Thr	Arg	Arg	Gln	Lys	Lys	Thr	Leu	Lys	Lys	Thr	450	455	460	
Arg	Lys	Phe	Ile	Val	Asp	Gly	Val	Glu	Val	Ser	Val	Thr	Thr	Ser	Lys	465	470	475	480
Ile	Val	Thr	Asp	Ser	Asp	Ser	Lys	Thr	Glu	Glu	Leu	Arg	Phe	Leu	Arg	485	490	495	
Arg	Gln	Glu	Leu	Arg	Glu	Leu	Arg	Leu	Leu	Gln	Lys	Glu	Glu	Gln	Arg	500	505	510	
Ala	Gln	Gln	Gln	Leu	Asn	Gly	Lys	Leu	Gln	Gln	Gln	Arg	Glu	Gln	Ile	515	520	525	
Phe	Arg	Arg	Phe	Glu	Gln	Glu	Met	Leu	Ser	Lys	Lys	Arg	Gln	Tyr	Asp	530	535	540	
Gln	Glu	Ile	Glu	Asn	Leu	Glu	Lys	Gln	Gln	Lys	Gln	Thr	Ile	Glu	Arg				

545		550		555		560									
Leu	Glu	Gln	Glu	His	Thr	Asn	Arg	Leu	Arg	Asp	Glu	Ala	Lys	Arg	Ile
				565					570						575
Lys	Gly	Glu	Gln	Glu	Lys	Glu	Leu	Ser	Lys	Phe	Gln	Asn	Val	Leu	Lys
			580					585						590	
Asn	Arg	Lys	Lys	Glu	Glu	Gln	Glu	Phe	Val	Gln	Lys	Gln	Gln	Gln	Glu
		595					600					605			
Leu	Asp	Gly	Ser	Leu	Lys	Lys	Ile	Ile	Gln	Gln	Gln	Lys	Ala	Glu	Leu
	610					615					620				
Ala	Asn	Ile	Glu	Arg	Glu	Cys	Leu	Asn	Asn	Lys	Gln	Gln	Leu	Met	Arg
625					630					635					640
Ala	Arg	Glu	Ala	Ala	Ile	Trp	Glu	Leu	Glu	Glu	Arg	His	Leu	Gln	Glu
				645					650					655	
Lys	His	Gln	Leu	Leu	Lys	Gln	Gln	Leu	Lys	Asp	Gln	Tyr	Phe	Met	Gln
			660					665					670		
Arg	His	Gln	Leu	Leu	Lys	Arg	His	Glu	Lys	Glu	Thr	Glu	Gln	Met	Gln
		675					680					685			
Arg	Tyr	Asn	Gln	Arg	Leu	Ile	Glu	Glu	Leu	Lys	Asn	Arg	Gln	Thr	Gln
	690					695					700				
Glu	Arg	Ala	Arg	Leu	Pro	Lys	Ile	Gln	Arg	Ser	Glu	Ala	Lys	Thr	Arg
705					710					715					720
Met	Ala	Met	Phe	Lys	Lys	Ser	Leu	Arg	Ile	Asn	Ser	Thr	Ala	Thr	Pro
				725					730					735	
Asp	Gln	Asp	Arg	Glu	Lys	Ile	Lys	Gln	Phe	Ala	Ala	Gln	Glu	Glu	Lys
			740					745					750		
Arg	Gln	Lys	Asn	Glu	Arg	Met	Ala	Gln	His	Gln	Lys	His	Glu	Ser	Gln
		755					760					765			
Met	Arg	Asp	Leu	Gln	Leu	Gln	Cys	Glu	Ala	Asn	Val	Arg	Glu	Leu	His
	770					775					780				
Gln	Leu	Gln	Asn	Glu	Lys	Cys	His	Leu	Leu	Val	Glu	His	Glu	Thr	Gln
785					790					795					800

Lys Leu Lys Glu Leu Asp Glu Glu His Ser Gln Glu Leu Lys Glu Trp  
805 810 815

Arg Glu Lys Leu Arg Pro Arg Lys Lys Thr Leu Glu Glu Glu Phe Ala  
820 825 830

Arg Lys Leu Gln Glu Gln Glu Val Phe Phe Lys Met Thr Gly Glu Ser  
835 840 845

Glu Cys Leu Asn Pro Ser Ala Gln Ser Arg Ile Ser Lys Phe Tyr Pro  
850 855 860

Ile Pro Thr Leu His Ser Thr Gly Ser  
865 870

<210> 8

<211> 875

<212> PRT

<213> Rattus norvegicus

<400> 8

Ala Leu Pro Ile Pro Ala Asn Lys Arg Ala Ser Ser Asp Leu Ser Ile  
1 5 10 15

Ala Ser Ser Glu Glu Asp Lys Leu Ser Gln Asn Ala Cys Ile Leu Glu  
20 25 30

Ser Val Ser Glu Arg Thr Glu His Asn Thr Ser Gly Asp Lys Phe Ser  
35 40 45

Asn Lys Val Leu Ser Glu Lys Pro Thr Pro Glu Gly Pro Glu Lys Thr  
50 55 60

Val Asp Val Asp Gly Pro Ala Asn Asp Val Asn Leu Glu Thr Val Ala  
65 70 75 80

Glu Pro Asn Asp Gln Ala Val Gly Phe His Glu Asn Gly Arg Glu Lys  
85 90 95

Lys Arg Pro Gln Leu Glu Ser Gln Pro Asp Thr Glu Asp Gln Gln Thr  
100 105 110

Val Asp Val Asn Leu Val Gly Glu Gly Asn Asp Ser Asn Ile Val Ile  
115 120 125

Leu Glu Thr Asn Thr Asp Cys Leu Lys Pro Glu Glu Asp Arg Asn Glu  
 130 135 140

Glu Asn Gln Glu Ile Ile Glu Asn Lys Leu Thr Gln Ser Glu Glu Ile  
 145 150 155 160

Lys Asp Ile His Ile Gln Thr Met Asp Leu Val Ser Gln Glu Thr Gly  
 165 170 175

Glu Lys Glu Ala Asp Phe Gln Ala Ile Asp Asn Glu Val Gly Phe Thr  
 180 185 190

Lys Glu Glu Thr Gln Glu Lys Leu Gly Lys Asp Asp Lys Thr His Lys  
 195 200 205

Val Val Ile Ser Asp Ile Thr Ser Glu Val Gly Thr Asp Glu Pro Pro  
 210 215 220

Gly Asp Thr Gln Lys Ser Ala Glu Gln Ser Gln Asp Ala Glu Gly Gly  
 225 230 235 240

Ala Gly Glu Glu Ala Pro Glu Pro Ala Gln Thr Leu Thr Glu Lys Ala  
 245 250 255

Thr Glu Gly Pro Glu Ala His Gly Ala Glu Glu Glu Pro Arg Ser Gly  
 260 265 270

Glu Arg Val Glu Asp Lys Gln Leu Glu Gln Gln Ser Ala Val Cys Glu  
 275 280 285

Gly Glu Gly Gln Val Thr Ser Thr Ser Glu Ser Thr Arg Ala Thr Thr  
 290 295 300

Glu Glu Pro Glu Thr Asp Glu Val Asp Gln Val Ser Glu Ser Asn Ser  
 305 310 315 320

Ile Glu Glu Leu Glu Arg Leu Gly Val Thr Gly Ala Glu Glu Gln Ala  
 325 330 335

Leu Gly Ser Lys Gly Glu Ala Ala Thr Glu Leu Asp Leu Glu Arg Glu  
 340 345 350

Glu Asn Ala Gln Glu Leu Pro Val Lys Ala Glu Pro Gln Ala Pro Ala  
 355 360 365

Ala Ser Gln Ala Ser Glu Pro Pro Pro Val Leu Ile Pro Ser Ile Asn  
 370 375 380

Ile	His	Ser	Glu	Asn	Thr	Glu	Asn	Lys	Gly	Glu	Met	Gly	Ala	Leu	Pro	
385					390					395					400	
Lys	Pro	Glu	Thr	Ile	Leu	Pro	Pro	Glu	Pro	Glu	Asn	Gly	Lys	Gly	Asn	
				405					410					415		
Asp	Thr	Asp	Ser	Gly	Thr	Gly	Ser	Thr	Val	Glu	Asn	Ser	Ser	Ser	Asp	
			420					425					430			
Leu	Asn	Leu	Ser	Ile	Ser	Ser	Phe	Leu	Ser	Lys	Asp	Ser	Gly	Ser	Val	
		435					440					445				
Ser	Leu	Gln	Glu	Thr	Arg	Arg	Gln	Lys	Lys	Thr	Leu	Lys	Lys	Thr	Arg	
	450					455					460					
Lys	Phe	Ile	Val	Asp	Gly	Val	Glu	Val	Ser	Val	Thr	Thr	Ser	Lys	Ile	
465					470					475					480	
Val	Thr	Asp	Ser	Asp	Ser	Lys	Thr	Glu	Glu	Leu	Arg	Phe	Leu	Arg	Arg	
				485					490					495		
Gln	Glu	Leu	Arg	Glu	Leu	Arg	Leu	Leu	Gln	Lys	Glu	Glu	Gln	Lys	Ala	
			500					505					510			
Gln	Gln	Gln	Leu	Asn	Gly	Lys	Leu	Gln	Gln	Gln	Arg	Glu	Gln	Ile	Phe	
			515				520					525				
Arg	Arg	Phe	Glu	Gln	Glu	Met	Leu	Ser	Lys	Lys	Arg	Gln	Tyr	Asp	Gln	
	530					535					540					
Glu	Ile	Glu	Asn	Leu	Glu	Lys	Gln	Gln	Lys	Gln	Thr	Ile	Glu	Arg	Leu	
545					550					555					560	
Glu	Gln	Glu	His	Thr	Asn	Arg	Leu	Arg	Asp	Glu	Ala	Lys	Arg	Ile	Lys	
				565					570					575		
Gly	Glu	Gln	Glu	Lys	Glu	Leu	Ser	Lys	Phe	Gln	Asn	Met	Leu	Arg	Asn	
			580					585					590			
Arg	Lys	Lys	Glu	Glu	Gln	Glu	Phe	Val	Gln	Lys	Gln	Gln	Gln	Glu	Leu	
		595					600						605			
Asp	Gly	Ala	Leu	Lys	Lys	Ile	Ile	Gln	Gln	Gln	Lys	Ala	Glu	Leu	Ala	
	610					615					620					
Asn	Ile	Glu	Arg	Glu	Cys	Leu	Asn	Asn	Lys	Gln	Gln	Leu	Leu	Arg	Ala	

625		630		635		640
Arg Glu Ala Ala Ile Trp Glu Leu Glu Glu Arg His Leu Gln Glu Lys						
		645		650		655
His Gln Leu Leu Lys Gln Gln Leu Lys Asp Gln Tyr Phe Ile Gln Arg						
		660		665		670
His Gln Leu Leu Lys Arg His Glu Lys Glu Thr Glu Gln Met Gln Arg						
		675		680		685
Tyr Asn Gln Arg Leu Ile Glu Glu Leu Lys Asn Arg Gln Thr Gln Glu						
		690		695		700
Arg Ala Arg Leu Pro Lys Ile Gln Arg Ser Glu Ala Lys Thr Arg Met						
		705		710		715
Ala Met Phe Lys Lys Ser Leu Arg Ile Asn Ser Thr Ala Thr Pro Asp						
		725		730		735
Gln Asp Arg Glu Lys Ile Lys Gln Phe Ala Ala Gln Glu Glu Lys Arg						
		740		745		750
Gln Lys Asn Glu Arg Met Ala Gln His Gln Lys His Glu Ser Gln Met						
		755		760		765
Arg Asp Leu Gln Leu Gln Cys Glu Ala Asn Val Arg Glu Leu His Gln						
		770		775		780
Leu Gln Asn Glu Lys Cys His Leu Leu Val Glu His Glu Thr Gln Lys						
		785		790		795
Leu Lys Glu Leu Asp Glu Glu His Ser Gln Glu Leu Lys Glu Trp Arg						
		805		810		815
Glu Lys Leu Arg Pro Arg Lys Lys Thr Leu Glu Glu Glu Phe Ala Arg						
		820		825		830
Lys Leu Gln Glu Gln Glu Val Phe Phe Lys Met Thr Gly Glu Ser Glu						
		835		840		845
Cys Leu Asn Pro Ser Ala Gln Ser Arg Gly Cys Leu Gln Thr Ser His						
		850		855		860
Pro Ser Ser Thr Arg Ala Pro Ala Trp Ala Gly						
		865		870		875

<210> 9

<211> 516

<212> PRT

<213> Rattus norvegicus

<400> 9

Arg Pro Asn Ser Ser Ala Leu Glu Thr Leu Gly Gly Glu Ala Leu Thr  
1 5 10 15

Asn Gly Gly Leu Glu Leu Pro Ser Ser Val Thr Pro Ser His Ser Lys  
20 25 30

Arg Ala Ser Asp Cys Ser Asn Leu Ser Thr Ser Glu Ser Met Asp Tyr  
35 40 45

Gly Thr Ser Leu Ser Ala Asp Leu Ser Leu Asn Glu Thr Gly Ser Leu  
50 55 60

Ser Leu Lys Gly Ser Lys Leu His Asn Lys Thr Leu Lys Arg Thr Arg  
65 70 75 80

Arg Phe Val Val Asp Gly Val Glu Val Ser Ile Thr Thr Ser Lys Ile  
85 90 95

Ile Ser Glu Asp Glu Lys Lys Asp Glu Glu Met Arg Phe Leu Arg Arg  
100 105 110

Gln Glu Leu Arg Glu Leu Arg Leu Leu Gln Lys Glu Glu His Arg Asn  
115 120 125

Gln Thr Gln Leu Ser Ser Lys His Glu Leu Gln Leu Glu Gln Met His  
130 135 140

Lys Arg Phe Glu Gln Glu Ile Asn Ala Lys Lys Lys Phe Tyr Asp Val  
145 150 155 160

Glu Leu Glu Asn Leu Glu Arg Gln Gln Lys Gln Gln Val Glu Lys Met  
165 170 175

Glu Gln Asp His Ser Val Arg Arg Lys Glu Glu Ala Lys Arg Ile Arg  
180 185 190

Leu Glu Gln Asp Arg Asp Tyr Ala Lys Phe Gln Glu Gln Leu Lys Gln  
195 200 205

Met	Lys	Lys	Glu	Val	Lys	Ser	Glu	Val	Glu	Lys	Leu	Pro	Arg	Gln	Gln	210	215	220
Arg	Lys	Glu	Ser	Met	Lys	Gln	Lys	Met	Glu	Glu	His	Ser	Gln	Lys	Lys	225	230	235
Gln	Arg	Leu	Asp	Arg	Asp	Phe	Val	Ala	Lys	Gln	Lys	Glu	Asp	Leu	Glu	245	250	255
Leu	Ala	Met	Arg	Lys	Leu	Thr	Thr	Glu	Asn	Arg	Arg	Glu	Ile	Cys	Asp	260	265	270
Lys	Glu	Arg	Asp	Cys	Leu	Ser	Lys	Lys	Gln	Glu	Leu	Leu	Arg	Asp	Arg	275	280	285
Glu	Ala	Ala	Leu	Trp	Glu	Met	Glu	Glu	His	Gln	Leu	Gln	Glu	Arg	His	290	295	300
Gln	Leu	Val	Lys	Gln	Gln	Leu	Lys	Asp	Gln	Tyr	Phe	Leu	Gln	Arg	His	305	310	315
Asp	Leu	Leu	Arg	Lys	His	Glu	Lys	Glu	Arg	Glu	Gln	Met	Gln	Arg	Tyr	325	330	335
Asn	Gln	Arg	Met	Met	Glu	Gln	Leu	Lys	Val	Arg	Gln	Gln	Gln	Glu	Lys	340	345	350
Ala	Arg	Leu	Pro	Lys	Ile	Gln	Arg	Ser	Asp	Gly	Glu	Thr	Arg	Met	Ala	355	360	365
Met	Tyr	Lys	Lys	Ser	Leu	His	Ile	Asn	Gly	Ala	Gly	Ser	Ala	Ser	Glu	370	375	380
Gln	Arg	Glu	Lys	Ile	Lys	Gln	Phe	Ser	Gln	Gln	Glu	Glu	Lys	Arg	Gln	385	390	395
Lys	Ala	Glu	Arg	Leu	Gln	Gln	Gln	Gln	Lys	His	Glu	His	Gln	Met	Arg	405	410	415
Asp	Met	Val	Ala	Gln	Cys	Glu	Ser	Asn	Met	Ser	Glu	Leu	Gln	Gln	Leu	420	425	430
Gln	Asn	Glu	Lys	Cys	Tyr	Leu	Leu	Val	Glu	His	Glu	Thr	Gln	Lys	Leu	435	440	445
Lys	Ala	Leu	Asp	Glu	Ser	His	Asn	Gln	Ser	Leu	Lys	Glu	Trp	Arg	Asp	450	455	460



Lys Leu Arg Pro Arg Lys Lys Ala Leu Glu Glu Asp Leu Asn Gln Lys  
465 470 475 480

Lys Arg Glu Gln Glu Met Phe Phe Lys Leu Ser Glu Glu Ala Glu Pro  
485 490 495

Arg Pro Thr Thr Pro Ser Lys Ala Ser Asn Phe Phe Pro Tyr Ser Ser  
500 505 510

Gly Asp Ala Ser  
515

<210> 10

<211> 637

<212> PRT

<213> Rattus norvegicus

<400> 10

Gly Ala Ser Ser Asp Leu Ser Ile Ala Ser Ser Glu Glu Asp Lys Leu  
1 5 10 15

Ser Gln Asn Ala Cys Ile Leu Glu Ser Val Ser Glu Arg Ile Glu His  
20 25 30

Asn Thr Pro Gly Asp Lys Phe Ser Asn Lys Val Leu Asn Glu Arg Pro  
35 40 45

Thr Thr Asp Glu Pro Gly Lys Ala Leu Lys Gly Val Asn Glu His Met  
50 55 60

Gly Asp Ser Asn Leu Glu Ser Met Ala Glu Leu Ser Asp Gln Thr Val  
65 70 75 80

Gly Ile His Glu His Gly Arg Glu Lys Arg Pro Lys Leu Glu Asn Pro  
85 90 95

Pro Asp Thr Glu Asp Gln Gln Leu Val Asp Ile Asn Ser Val Arg Glu  
100 105 110

Gly Asn Glu Glu Asn Ile Val Thr Leu Glu Met Asn Thr Asn His Val  
115 120 125

Lys Pro Glu Glu Asp Arg Glu Lys Glu Asn Gln Glu Ile Pro Glu Asn

130																	
Lys	Leu	Arg	Gln	Ser	Glu	Glu	Ile	Lys	Asp	Met	Asn	Ile	Gln	Thr	Met		
145					150					155					160		
Asp	Leu	Val	Ser	Gln	Glu	Thr	Gly	Glu	Thr	Glu	Ala	Asp	Phe	Gln	Ala		
				165					170					175			
Val	Asp	Ser	Glu	Val	Gly	Phe	Thr	Lys	Ala	Asp	Gly	Gln	Glu	Lys	Leu		
			180					185					190				
Arg	Lys	Asp	Asp	Asn	Thr	Gln	Lys	Val	Val	Ile	Asn	Asp	Arg	Ile	Ser		
		195					200					205					
Glu	Val	Val	Ala	Asn	Glu	Ala	Leu	Asp	Val	Ala	Glu	Lys	Ala	Ala	Glu		
	210					215					220						
Gly	Ser	Ser	Ile	Lys	Asp	Ala	Gln	Ser	Ala	Asp	Gly	Lys	Glu	Ala	Val		
225					230					235					240		
Glu	Gly	Thr	Gln	Lys	Leu	Thr	Glu	Lys	Pro	Thr	Glu	Gly	Pro	Glu	Ala		
				245					250					255			
Gly	Ser	Ala	Glu	Glu	Glu	Pro	Ser	Ala	Gln	Gly	Arg	Val	Glu	Asn	Lys		
			260					265					270				
Glu	Val	His	Gln	Gln	Ser	Ala	Val	Cys	Glu	Gly	Asp	Gly	Gln	Phe	Ile		
		275					280					285					
Ser	Thr	Ser	Val	Thr	Thr	Gln	Ala	Thr	Pro	Glu	Glu	Pro	Gly	Thr	Asp		
	290					295					300						
Glu	Val	Glu	Gln	Val	Ser	Glu	Ser	His	Ser	Thr	Glu	Glu	Arg	Glu	Pro		
305					310					315					320		
Ser	Pro	Val	Ser	Gly	Gly	Ala	Glu	Glu	Gln	Thr	Pro	Gly	Ser	Glu	Ala		
				325					330					335			
Val	Ala	Ala	Ala	Ala	Glu	Val	Glu	Leu	Glu	Gly	Arg	Glu	Ala	Ala	Gln		
				340				345					350				
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Thr Ser Lys Ile Ile Ser Glu Asp Glu Lys Lys Asp Glu Glu Met Arg  
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Phe Leu Arg Arg Gln Glu Leu Arg Glu Leu Arg Leu Leu Gln Lys Glu  
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Glu His Arg Asn Gln Thr Gln Leu Ser Thr Lys His Glu Leu Gln Leu  
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Glu Gln Met His Arg Arg Phe Glu Gln Glu Ile Asn Ala Lys Lys Lys  
100 105 110

Phe Tyr Asp Val Glu Leu Glu Asn Leu Glu Arg Gln Gln Lys Gln Gln  
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Val Glu Lys Met Glu Gln Asp His Ser Val Arg Arg Arg Glu Glu Ala  
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Lys Arg Ile Arg Leu Glu Gln Asp Arg Asp Tyr Ala Arg Phe Gln Glu  
145 150 155 160

Gln Leu Lys Gln Met Lys Lys Glu Val Lys Asn Glu Val Glu Lys Leu  
165 170 175

Pro Arg Gln Gln Arg Lys Glu Ser Met Lys Gln Lys Met Glu Glu His  
180 185 190

Ala Gln Lys Lys Gln Leu Leu Asp Arg Asp Phe Val Ala Lys Gln Lys  
195 200 205

Glu Asp Leu Glu Leu Ala Met Lys Lys Leu Thr Ala Glu Asn Arg Arg  
210 215 220

Glu Ile Cys Asp Lys Glu Arg Asp Cys Leu Asn Lys Lys Gln Glu Leu  
225 230 235 240

Leu Arg Asp Arg Glu Ala Ala Leu Trp Glu Met Glu Glu His Gln Leu  
245 250 255

Gln Glu Arg His Gln Leu Val Lys Gln Gln Leu Lys Asp Gln Tyr Phe  
260 265 270

Leu Gln Arg His Asp Leu Leu Arg Lys His Glu Lys Glu Arg Glu Gln  
275 280 285

Met Gln Arg Tyr Asn Gln Arg Met Met Glu Gln Leu Lys Val Arg Gln  
290 295 300

Gln Gln Glu Lys Ala Arg Leu Pro Lys Ile Gln Arg Ser Asp Gly Lys  
305 310 315 320

Thr Arg Met Ala Met Tyr Lys Lys Ser Leu His Ile Asn Gly Ala Gly  
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Ser Ala Ser Glu Gln Arg Glu Lys Val Lys Gln Phe Ser Gln Gln Glu  
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Glu Lys Arg Gln Lys Ala Glu Arg Leu Gln Gln Gln Gln Lys His Glu  
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Asn Gln Met Arg Asp Met Val Ala Gln Cys Glu Ser Asn Met Asn Glu  
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Leu Gln Gln Leu Gln Asn Glu Lys Cys His Leu Leu Val Glu His Glu  
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Thr Gln Lys Leu Lys Ala Leu Asp Glu Ser His Asn Gln Ser Leu Lys  
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Glu Trp Arg Asp Lys Leu Arg Pro Arg Lys Lys Ala Leu Glu Glu Asp  
420 425 430

Leu Asn Gln Lys Lys Arg Glu Gln Glu Met Phe Phe Arg Leu Ser Glu  
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Glu Ala Glu Thr Arg Pro Thr Thr Pro Asn Arg Ala Ser Lys Phe Phe

450

455

460

Pro Tyr Ser Ser Gly Asp Ala Ser  
465 470